CLAIMS

What is claimed is:

1. A method of treatment for a mammal in, or at risk of, acute renal failure comprising

administering to said mammal a therapeutically effective amount of an OP/BMP renal therapeutic agent.

2. A method of treatment to delay the need for, or reduce the frequency of, dialysis treatments of a mammal, the method comprising

administering to said mammal a therapeutically effective amount of an OP/BMP renal therapeutic agent.

3. A method of reducing inflammation, the accumulation of neutrophils, and/or neutrophil-mediated damage in a mammalian tissue which has been damaged or injured, or which is at risk of damage or injury, comprising

administering to said mammal a therapeutically effective amount of an OP/BMP renal therapeutic agent.

4. A method of inhibiting apoptosis of cells in a mammalian tissue which has been damaged or injured, or which is at risk of damage or injury, comprising

administering to said mammal a therapeutically effective amount of an OP/BMP renal therapeutic agent.

5. A method as in any one of claims 1-4 wherein said renal therapeutic agent comprises a polypeptide consisting of at least a C-terminal cysteine domain of a protein selected from the group consisting of a pro form, a mature form, and a soluble form of a polypeptide selected from the group consisting of OP-1, OP-2, OP-3, BMP2, BMP3, BMP4, BMP5, BMP6, and BMP9.

6. A method as in claim 5 wherein said renal therapeutic agent comprises a polypeptide consisting of at least a C-terminal cysteine domain of a protein selected from the group consisting of a pro form, a mature form, and a soluble form of human OP-1.

7. A method as in any one of claims 1-4 wherein said renal therapeutic agent comprises a polypeptide having at least 70% homology with an amino acid sequence of a seven-cysteine domain of human OP-1.

8. A method as in claim 7 wherein said polypeptide has at least 75% homology with an amino acid sequence of a seven-cysteine domain of human OP-1.

9. A method as in claim 7 wherein said polypeptide has at least 80% homology with an amino acid sequence of a seven-cysteine domain of human OP-1.

10. A method as in claim 7 wherein said polypeptide has at least 60% identity with an amino acid sequence of a seven-cysteine domain of human OP-1.

11. A method as in claim 7 wherein said polypeptide has at least 65% identity with an amino acid sequence of a seven-cysteine domain of human OP-1.

12. A method as in claim 7 wherein said polypeptide has at least 70% identity with an amino acid sequence of a seven-cysteine domain of human OP-1.

13. A method as in any one of claims 5-12 wherein said renal therapeutic agent

(a) induces chondrogenesis in an ectopic bone assay;

(b) prevents, inhibits, delays or alleviates loss of renal function resulting from acute renal failure in an animal model of acute renal failure; or

(c) causes a clinically significant improvement in a standard marker of renal function when administered to a mammal in, or at risk of, acute renal failure.

14. A method as in any one of claims 1-4 wherein said renal therapeutic agent is selected from the group consisting of human osteogenic proteins and human bone morphogenic proteins.

15. A method as in any one of claims 1-2 wherein

serial determination of BUN in said mammal indicates a rate of increase in BUN of at least 2 to 4 mmol/L/day (5 to 10 mg/dL/day).

16. A method as in any one of claims 1-2 wherein

serial determination of BUN in said mammal indicates a rate of increase in BUN of at least 4 to 8 mmol/L/day (10 to 20 mg/dL/day).

17. A method as in any one of claims 1-2 wherein

serial determination of serum creatinine in said mammal indicates a rate of increase in serum creatinine of at least 20 to 40 μmol/L/day (0.25 to 0.5 mg/dL/day).

18. A method as in any one of claims 1-2 wherein

serial determination of serum creatinine in said mammal indicates a rate of increase in serum creatinine of at least 40 to 80 μmol/L/day (0.5 to 1.0 mg/dL/day).

19. A method as in any one of claims 1-2 wherein

said mammal is afflicted with a condition selected from the group consisting of pre-renal causes of acute renal failure, post-renal causes of acute renal failure, and intrinsic renal causes of acute renal failure.

20. A method as in claim 19 wherein

said mammal is afflicted with a pre-renal cause of acute renal failure selected from the group consisting of decreased cardiac output, hypovolemia, volume redistribution, and altered vascular resistance.

21. A method as in claim 19 wherein

said mammal is afflicted with a post-renal cause of acute renal failure selected from the group consisting of ureteral, pelvic and bladder obstructions.

22. A method as in claim 19 wherein

said mammal is afflicted with an intrinsic renal cause of acute renal failure selected from the group consisting of abnormalities of the vasculature, abnormalities of the glomeruli, acute interstitial nephritis, intratubular obstruction, and acute tubular necrosis.

23. A method as in any one of claims 1-2 wherein

said mammal is a kidney transplant recipient.

24. A method as in any one of claims 1-2 wherein

said mammal possesses only one kidney.

25. A method as in any one of claims 1-4 wherein said administration is oral.

26. A method as in any one of claims 1-4 wherein said administration is parenteral.

27. A method as in any one of claims 1-4 wherein said administration is intravenous.

28. A method as in any one of claims 1-4 wherein said administration is intraperitoneal.

29. A method as in any one of claims 1-4 wherein said administration is into the renal capsule.

30. A method as in claim 26 wherein a stent has been implanted into said mammal for said administration.

31. A method as in claim 30 wherein said stent is an intravenous stent.

32. A method as in claim 30 wherein said stent is an intraperitoneal stent.

33. A method as in claim 30 wherein said stent is a renal intracapsular stent.

34. A method as in claim 26 wherein said administration is by an implanted device.

35. A method as in any one of claims 1-4 wherein said administration is daily for a period of at least about one week.

36. A method as in any one of claims 1-4 wherein said administration is at least once a week for a period of at least about one month.

37. A method as in any one of claims 1-4 wherein said renal therapeutic agent is administered at a dosage of about 0.01-1000 μg/kg body weight of said mammal.

38. A method as in claim 37 wherein said renal therapeutic agent is administered at a dosage of about 0.1-100 μg/kg body weight of said mammal.

39. Use of an OP/BMP renal therapeutic agent in the manufacture of a medicament for the treatment for a mammal in, or at risk of, acute renal failure.

40. Use of an OP/BMP renal therapeutic agent in the manufacture of a medicament to delay the need for, or reduce the frequency of, dialysis treatments of a mammal.

41. Use of an OP/BMP renal therapeutic agent in the manufacture of a medicament for reducing inflammation, the accumulation of neutrophils, and/or neutrophil-mediated damage in a mammalian tissue which has been damaged or injured, or which is at risk of damage or injury.

42. Use of an OP/BMP renal therapeutic agent in the manufacture of a medicament for inhibiting apoptosis of cells in a mammalian tissue which has been damaged or injured, or which is at risk of damage or injury.

43. A use as in any one of claims 39-42 wherein said renal therapeutic agent comprises a polypeptide consisting of at least a C-terminal cysteine domain of a protein selected from the group consisting of a pro form, a mature form, and a soluble form of a polypeptide selected from the group consisting of OP-1, OP-2, OP-3, BMP2, BMP3, BMP4, BMP5, BMP6, and BMP9.

44. A use as in claim 43 wherein said renal therapeutic agent comprises a polypeptide consisting of at least a C-terminal cysteine domain of a protein selected from the group consisting of a pro form, a mature form, and a soluble form of human OP-1.

45. A use as in any one of claims 39-42 wherein said renal therapeutic agent comprises a polypeptide having at least 70% homology with an amino acid sequence of a seven-cysteine domain of human OP-1.

46. A use as in claim 45 wherein said polypeptide has at least 75% homology with an amino acid sequence of a seven-cysteine domain of human OP-1.

47. A use as in claim 45 wherein said polypeptide has at least 80% homology with an amino acid sequence of a seven-cysteine domain of human OP-1.

48. A use as in claim 45 wherein said polypeptide has at least 60% identity with an amino acid sequence of a seven-cysteine domain of human OP-1.

49. A use as in claim 45 wherein said polypeptide has at least 65% identity with an amino acid sequence of a seven-cysteine domain of human OP-1.

50. A use as in claim 45 wherein said polypeptide has at least 70% identity with an amino acid sequence of a seven-cysteine domain of human OP-1.

51. A use as in any one of claims 43-50 wherein said renal therapeutic agent

(a) induces chondrogenesis in an ectopic bone assay;

(b) prevents, inhibits, delays or alleviates loss of renal function resulting from acute renal failure in an animal model of acute renal failure; or

(c) causes a clinically significant improvement in a standard marker of renal function when administered to a mammal in, or at risk of, acute renal failure.

52. A use as in any one of claims 39-42 wherein said renal therapeutic agent is selected from the group consisting of human osteogenic proteins and human bone morphogenic proteins.